REMARKS

Claims 1 and 4 stand rejected under 35 U.S.C. 102(e) as being anticipated by Vetter et al. (4,458,482); claims 1, 2, 4 and 14 stand rejected under 35 U.S.C. 102(e) as being anticipated by Brogan (5,129,326); claims 1-7 and 14-16 stand rejected under 35 U.S.C. 102(e) as being anticipated by Bischoff (3,357,356); and claims 8, 9, 13 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bischoff in view of Vetter et al (4,478,151). The Examiner has indicated that claims 10-12 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

It is requested that the Examiner reconsider and withdraw the rejections of claims 1-9 and 13-17 for the reason that none of the cited references, taken individually or in combination, anticipates or renders obvious the novel recitations in these claims.

Claim 1 and dependent claims 2-9,13, 16 and 17 all call for the improvement in a rocket motor or ordnance device containing propellant or explosive material enclosed in a case, which presents an explosion hazard when subjected to external heat, comprising an exposed combustible strip formed of a non-explosive and non-pyrotechnic material secured to or formed as part of the exterior surface of the case, the strip being constructed to burn and generate sufficient heat to weaken the adjacent portion of the case and effect rupture of the case to vent interior gases therein prior to autoignition of the propellant or explosive.

Dependent claim 2 calls for the strip as being in contact with the exterior surface of the case, and dependent claim 4 calls for the strip as extending partially around the exterior surface of the case.

Similarly, method claim 14 and dependent claim 15 call for a method of venting a rocket motor or ordnance device case containing propellant or explosive material which presents an

explosive hazard when subjected to external heat, comprising providing an exposed combustible strip on the exterior surface of the case, the strip being formed of a non-explosive and non-pyrotechnic material constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture of the case to vent interior gases prior to autoignition of the propellant or explosive.

Dependent claim 15 calls for a plurality of combustible strips being provided on the exterior surface of the case in spaced relation thereon, and dependent claim 16 calls for the strip as being formed of a material that generates heat when combusted at a rate faster than the material of the case.

The novel apparatus and method recited in claims 1-9 and 13-17 clearly are not anticipated or rendered obvious by the teachings of Vetter '482. This reference discloses the provision of a bare patch 15, 15' or 15" in an insulating coating 14 on the outside of a rocket motor casing 13, the bare patch having a shape to intensify heat produced stress in a predetermined area of the casing to cause failure of the casing at the predetermined area as a cook-off safety feature in the event of an external fire.

There is no teaching whatsoever in Vetter '482 of Applicant's novel feature of an exposed combustible strip formed of a non-explosive and non-pyrotechnic material secured to or formed as part of the exterior surface of the case, the strip being constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases therein prior to autoignition of the propellant or explosive, as specifically recited in claims 1-9 and 13-17.

In the rejection, the Examiner alleges that Vetter '482 discloses "an exposed combustible strip (15) formed of a non-explosive and non-pyrotechnic material formed as part of the exterior

surface of the casing (Fig. 4 or 5)". It is noted, however, that the area 15, 15' or 15" in Vetter '482 is not an exposed combustible strip, but instead is a bare patch in an insulating coating 14 on the outside of the rocket motor casing 13. The bare patch is nothing more than the rocket motor casing surface itself and is clearly not a combustible strip which is constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases therein prior to autoignition of the propellant or explosive in the case, as specifically recited in Applicant's claims. The purpose of the bare patch in Vetter '482 is to create stress in the rocket motor casing for the reason that it does not have any thermal coating protection thereon.

The Examiner further alleges that the exposed bare patch of Vetter '482 is formed as part of the exterior surface of the case and has the same function as Applicant's invention to prevent interior pressure from reaching a dangerous level and causing explosive destruction. While the function may be the same, the bare patch of Vetter '482 is completely different from Applicant's exposed combustible strip that is secured to or formed as part of the exterior surface of the case and is constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases. Accordingly, there is clearly no teaching in Vetter '482 that would anticipate or even render obvious the novel recitations in Applicant's claims.

The teachings of Brogan clearly fail to anticipate or render obvious the novel recitations in Applicant's claims. Brogan discloses the controlled venting of combustion gases from an explosive material encased in a shell, such as a rocket motor, warhead or bomb. This is accomplished by affixing a composite solid mass to the interior surface of the shell at preselected locations. The solid mass includes an ignition mix and a reaction mix. In all of the embodiments

shown and described in Brogan, the composite solid mass is mounted on the interior of the shell casing and, in certain embodiments, between the interior of the shell casing and the insulating liner 25 therein.

It is readily apparent, therefore, that Brogan fails completely to disclose or suggest Applicant's novel invention of an exposed combustible strip formed of non-explosive and non-pyrotechnic material secured to or formed as part of the exterior of the case, the strip being constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases therein prior to the autoignition of the propellant or explosive therein, as specifically recited in all of the rejected claims.

The patent to Bischoff also fails completely to anticipate or render obvious any of the novel recitations in the rejected claims. First, Bischoff does not relate to an apparatus and method for passive venting of a rocket motor or ordnance case. Second, the disclosure of Bischoff relates to a missile case that is constructed to explode to separate it into different segments for the purpose of confusing an enemy's detection apparatus. The missile case of Bischoff comprises longitudinal and circumferential troughs 14 and 16 that are filled with a suitable heat resistant explosive 22 and covered with closure strips 18 and 20 that are hermetically sealed from both the inside of the case and from the outside. In operation, after the nose cone and warhead 12 are separated from the case, it is divided into segments by detonating the explosive 22 in the troughs 14 and 16.

The Examiner alleges that the strips 18 and 20 of Bischoff are combustible strips that are constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases prior to

autoignition of the propellant or explosive therein. This is clearly not true. The strips 18 and 20 of Bischoff are nothing more than closure strips that are welded in place over the troughs 14 and 16 to seal the explosive 22 therein. Accordingly, the teachings of Bischoff have no relevance to Applicant's invention and fail completely to anticipate or to render obvious the novel recitations in the rejected claims.

The teachings of Vetter '151 fail to supply the deficiencies of the teachings Bischoff with respect to the novel recitations in the rejected apparatus and method claims. This reference discloses the positive venting or weakening of a pressure hull in the event of an external fuel fire such that, when the propellant grain of the ordnance ignites, the grain vents harmlessly through the weakened or open wall of the pressure hull. This is accomplished by placing a small charge of thermite or thermite-like material at predetermined locations on the interior of the pressure hull. An igniter is intimately associated with these thermite charges and the entire assembly is covered with an insulator of the type conventionally used as a rocket motor liner. This construction is completely different from Applicant's claimed construction and method wherein an exposed combustible strip is secured to or formed as part of the exterior surface of the case, the strip being constructed to burn and generate sufficient heat when exposed to predetermined external heat to weaken the adjacent portion of the case and effect rupture thereof to vent interior gases prior to autoignition of the propellant or explosive.

The Examiner states that Vetter '151 teaches a plurality of strips which are in circumferentially and longitudinally spaced relation to the exterior surface of the case and are in the form of rings mounted in spaced relation on the exterior surface of the case (Fig. 5). It is noted, however, that Fig. 5 of Vetter '151 merely discloses the placement of igniters 21 on the

exterior of a thermite mass 15' that is positioned on the interior of the pressure hull. Attention is directed to column 4, lines 16-20 of this reference wherein it is clearly stated as follows:

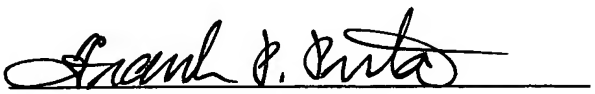
> "Referring to Fig. 6, a perspective view of another embodiment of the invention is illustrated. In this embodiment, strips of thermite material indicated at 30 are placed on inner surface 14 of hull 11 in a manner similar to the placement of pellets 13 and 13' in Fig. 1."

It is apparent, therefore, that Vetter '151 does not disclose or even suggest Applicant's novel feature of an exposed combustible strip secured to or formed as part of the exterior surface of the case to burn and vent the case when exposed to predetermined external heat, as recited in claims 1-17. Applicant's novel construction and method are significantly different and far simpler in construction and operation from the pressure hull penetrator of Vetter '151 and the constructions in the other cited references.

In view of the above remarks, it is submitted that all of the claims 1-17 in this application are clearly allowable to Applicant, and formal allowance thereof is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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